Amendments to the Claims:

1-147. (canceled)

148. (currently amended) ~~A~~ The construct of claim 221 ~~for use as a tissue engineering scaffold for implanting into a subject comprising:~~

~~a tissue engineered construct that has been subjected to decellularization,~~ wherein during the growth period the tissue engineered construct ~~comprises a tissue engineered construct that has been~~ was subjected to electrical stimulation ~~during a first growth period~~.

149-184. (canceled)

185. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct: and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells. and~~ wherein ~~the decellularized tissue engineered construct comprises a decellularized tissue engineered construct that has been~~ the first population of cells was subjected to electrical stimulation during a growth period.

186-187. (canceled)

188. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct: and~~

~~a population~~ wherein the ~~decellularized tissue engineered construct is seeded with the population of cells. and wherein the decellularized tissue engineered construct comprises a decellularized tissue engineered construct produced using~~ first population of cells are human cells.

189. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct; and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells, and~~ wherein the ~~decellularized tissue engineered construct comprises a decellularized tissue engineered construct produced using~~ first population of cells are neonatal cells.

190. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct; and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells, and~~ wherein the ~~decellularized tissue engineered construct comprises a decellularized tissue engineered construct produced using~~ first population of cells are genetically transformed cells.

191-193. (canceled)

194. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct; and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells, and~~ wherein the second population of cells is cultured *in vitro* before the decellularized tissue engineered construct is seeded therewith.

195. (canceled)

196. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct; and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells. and~~ wherein the second population of cells comprises cells of at least two different cell types.

197. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct: and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells. and~~ wherein the second population of cells comprises neonatal cells.

198. (currently amended) ~~A~~ The construct of claim 255 ~~for use in tissue engineering or for implanting into a subject comprising:~~

~~a decellularized tissue engineered construct: and~~

~~a population wherein the decellularized tissue engineered construct is seeded with the population of cells. and~~ wherein the second population of cells comprises human cells.

199-218. (canceled)

219. (New) A method for producing a decellularized tissue engineered construct comprising the steps of:

culturing a 3-dimensional mass of living cells to form a proteinaceous extracellular matrix surrounding said cells; and

decellularizing the proteinaceous extracellular matrix, thereby forming a decellularized tissue engineered construct comprising a 3-dimensional proteinaceous extracellular matrix.

220. (New) A construct for use as a tissue engineering scaffold or for implanting into a subject comprising:

a tissue engineered construct comprising a 3-dimensional proteinaceous extracellular matrix that has been subjected to decellularization, wherein the tissue engineered construct was formed by seeding a substrate with cells and maintaining said cells under conditions suitable for growth of the cells, whereby a proteinaceous extracellular matrix surrounding said cells is formed.

221. (New) The construct of claim 220, wherein the cells are maintained under conditions suitable for growth of the cells for a growth period of about 6 to 8 weeks.

222. (New) The construct of claim 220, wherein the cells are maintained under conditions suitable for growth of the cells for a period of time sufficient for formation of a tissue engineered construct having a thickness of greater than 200 μm.

223. (New) The construct of claim 220, wherein at least 50% of the cells are removed from the tissue engineered construct by decellularization.

224. (New) The construct of claim 220, wherein at least 60% of the cells are removed from the tissue engineered construct by decellularization.

225. (New) The construct of claim 220, wherein at least 70% of the cells are removed from the tissue engineered construct by decellularization.

226. (New) The construct of claim 220, wherein at least 80% of the cells are removed from the tissue engineered construct by decellularization.

227. (New) The construct of claim 220, wherein at least 90% of the cells are removed from the tissue engineered construct by decellularization.

228. (New) The construct of claim 220, wherein at least 95% of the cells are removed from the tissue engineered construct by decellularization.

229. (New) The construct of claim 220, wherein at least 99% of the cells are removed from the tissue engineered construct by decellularization.

230. (New) The construct of claim 220, further comprising a biologically active agent.

231. (New) The construct of claim 220, wherein the biologically active agent enhances recellularization or vascularization of the tissue engineered construct.

232. (New) The construct of claim 220, wherein the biologically active agent comprises a pharmaceutical composition.

233. (New) The construct of claim 220, wherein the biologically active agent is selected from the group consisting of: growth factors, adhesion factors, soluble extracellular matrix proteins, thrombomodulators, antibiotics, and agents that augment hemocompatibility.

234. (New) The construct of claim 221, wherein during the growth period the tissue engineered construct was subjected to a mechanical force.

235. (New) The construct of claim 221, wherein during the growth period the tissue engineered construct was subjected to a pulsatile stimulus.

236. (New) The construct of claim 221, wherein during the growth period the tissue engineered construct was treated with a growth factor.

237. (New) The construct of claim 221, wherein during the growth period the tissue engineered construct was exposed to serum.

238. (New) The construct of claim 220, wherein the substrate comprises a polymeric material.

239. (New) The construct of claim 220, wherein the substrate comprises a length of tubing.

240. (New) The construct of claim 220, wherein the length of tubing is coated.

241. (New) The construct of claim 220, wherein the substrate comprises a synthetic polymeric material.

242. (New) The construct of claim 238, wherein the polymeric material comprises a polymer selected from the group consisting of polyesters of hydroxycarboxylic acids, polyanhyrides of dicarboxylic acids, and copolymers of hydroxy carboxylic acids and dicarboxylic acids.

243. (New) The construct of claim 220, wherein the substrate comprises a collagen sponge.

244. (New) The construct of claim 220, wherein the substrate has an inner and outer surface, and wherein the inner surface of the substrate defines a lumen.

245. (New) The construct of claim 220, wherein the substrate comprises a flat surface.

246. (New) The construct of claim 220, wherein the substrate comprises a three-dimensional structure.

247. (New) The construct of claim 220, wherein the construct is treated so as to remove substantially all of the substrate.

248. (New) The construct of claim 220, wherein the cells are selected from the group consisting of: smooth muscle cells, cardiac muscle cells, epithelial cells, endothelial cells, urothelial cells, fibroblasts, myoblasts, chondrocytes, chondroblasts, osteoblasts, osteoclasts, hepatocytes, bile duct cells, pancreatic islet cells, thyroid, parathyroid, adrenal, hypothalamic, pituitary, ovarian, testicular, salivary gland cells, adipocytes, and precursor cells.

249. (New) The construct of claim 220, wherein the cells comprise cells of at least two different cell types.

250. (New) The construct of claim 220, wherein the cells comprise neonatal cells.

251. (New) The construct of claim 220, wherein the cells comprise human cells.

252. (New) The construct of claim 220, wherein the cells comprise porcine cells.

253. (New) The construct of claim 220, wherein the cells comprise tumor cells.

254. (New) The construct of claim 220, wherein the cells comprise genetically transformed cells.

255. (New) A construct for use in tissue engineering or for implanting into a subject comprising:

a decellularized tissue engineered construct comprising a 3-dimensional proteinaceous extracellular matrix synthesized by a first population of cells grown *in vitro* on a substrate whereby a proteinaceous extracellular matrix surrounding said cells is formed; and

a second population of cells, wherein the decellularized tissue engineered construct is seeded with the second population of cells.

256. (New) The construct of claim 255, wherein first population of cells was subjected to a mechanical force during a growth period.

257. (New) The construct of claim 255, wherein first population of cells was subjected to a pulsatile stimulus during a growth period.

258. (New) The construct of claim 255, wherein first population of cells was treated with a growth factor during a growth period.

259. (New) The construct of claim 255, wherein first population of cells was exposed to serum during a growth period.

260. (New) The construct of claim 257, wherein the first population of cells are human cells.

261. (New) The construct of claim 255, wherein the wherein the first population of cells were selected from the group consisting of: smooth muscle cells, cardiac muscle cells, epithelial cells, endothelial cells, urothelial cells, fibroblasts, myoblasts, chondrocytes, chondroblasts, osteoblasts, osteoclasts, hepatocytes, bile duct cells, pancreatic islet cells, thyroid, parathyroid, adrenal, hypothalamic, pituitary, ovarian, testicular, salivary gland cells, adipocytes, and precursor cells.

262. (New) The tissue engineered construct of claim 255, wherein the second population of cells comprise cells harvested from an intended recipient of the construct.

263. (New) The construct of claim 255, wherein the second population of cells is selected from the group consisting of: smooth muscle cells, cardiac muscle cells, epithelial cells, endothelial cells, urothelial cells, fibroblasts, myoblasts, chondrocytes, chondroblasts, osteoblasts, osteoclasts, hepatocytes, bile duct cells, pancreatic islet cells, thyroid, parathyroid, adrenal, hypothalamic, pituitary, ovarian, testicular, salivary gland cells, adipocytes, and precursor cells.

264. (New) The construct of claim 255, wherein the decellularized tissue engineered construct is maintained under growth conditions suitable for growth of the second population of cells.

265. (New) The construct of claim 264, wherein the growth conditions comprise a mechanical force.

266. (New) The construct of claim 264, wherein the growth conditions comprise a pulsatile stimulus.

267. (New) The construct of claim 264, wherein the growth conditions comprise electrical stimulation.

268. (New) The construct of claim 264, wherein the growth conditions comprise a growth factor.

269. (New) The construct of claim 264, wherein the growth conditions comprise serum.